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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,071	10/25/2000	James Norman Cawse	RD-28,030	3513

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EXAMINER

SMITH, CAROLYN L

ART UNIT	PAPER NUMBER
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1631

DATE MAILED: 05/12/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/696,071

Applicant(s)

CAWSE ET AL.

Examiner

Carolyn L Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 20 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1,3,4,6-19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) 16,17 and 21-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,3,4,6-15,18 and 19 is/are rejected.
- 7) ☐ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) 1,3,4,6-19 and 21-25 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

The cancellation of claims 2, 5, and 20; as well as the amendment of claims as set forth in Paper No. 11, filed 2/20/03; are acknowledged.

Applicant's arguments in Paper No. 11, filed 2/20/03, have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Typographical errors are noted in the Applicants' Response, filed 2/20/03, wherein the word "centenary" was written on page 3, line 22 and page 4, line 5, while the instant application refers instead to the word "pentenary."

The reaffirmation of the traversal to the restriction requirement is acknowledged. The restriction requirements are maintained from the previous Office action, mailed 1/27/03.

Claims herein under examination are claims 1, 3-4, 6-15, 18, and 19.

#### ***Claim Objections***

Claim 1 is objected to because of the following informalities: Line 10 contains the an improper period in the middle of the sentence. Line 10 contains the phrase "repeated iteration [] *space*" whereas only previously mentioned steps, not space, are apparently iterated. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The rejections of claims 1, 3, 4, 6-15, 18, and 19 are maintained or newly applied (due to amendments) under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 (line 10) and 18 (lines 9-11) recite the phrase "a best case set of factors" and claim 18 (line 1) recites the phrase "a best case set of experiments" which are vague and indefinite. It is unclear what criteria are used to determine that a case set is the best. Clarification of the metes and bounds of the claim via clearer claim wording is requested. Claims 6-15 and 19 are also rejected due to their direct or indirect dependency from claims 1 and 18. Claim 8 is also rejected due to a similar issue of the "best set of factors" being selected. This rejection is reiterated from the previous Office action, mailed 1/27/03, and unargued by Applicant

Claims 3 and 4 are vague and indefinite as they include reference to cancelled claim 2. Appropriate correction is requested.

Claim 3 recites the phrase "array of reactants" which is vague and indefinite. It is unclear if this phrase is referring to a microarray containing reactants or to a group of a large number of elements, in this case, reactants. Clarification of this phrase is required. This rejection is reiterated from the previous Office action, mailed 1/27/03, and unargued by Applicant.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. (e), (f) or (g) prior art under 35 U.S.C. 103(a).

Unfortunately, newly cited prior art has been found that supports this rejection.

Claims 1, 3, 4, and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reddington et al., in view of Chaudhari et al. (P/N 5,917,077), Agrafiotis et al. (P/N 5,901,069), and Nova et al. (P/N 5,961,923).

Reddington et al. describe a combinatorial screening method to select the best catalysts (page 1735, col. 2, lines 4-14 and page 1736, col. 1, lines 17-21), including ternary array combinations (page 1735, col. 3, lines 18-22 and 45-46) and parallel screening (page 1735, col. 3, lines 27-29). Reddington et al. describe the need for well designed arrays which include

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elements or vertices (called factors in the instant invention) including binary and ternary compositions (page 1736, col. 2, lines 6-19) which is equivalent to the "first experimental space" in the instant invention. Reddington et al. describe eliminating redundant binary and ternary spots (page 1736, col. 2, lines 22-26) which is equivalent to the "second experimental space" in the instant invention. Reddington et al. describe the array containing hundreds of different compositions (page 1736, col. 2, lines 26-30), as stated in claim 6. Reddington et al. describe an array with non-redundant spots or "unique spots" (Figure 2 caption, line 3) (called "five-pick-four" pattern in the text and "second experimental space" in the instant invention). Reddington et al. describe generating large combinatorial arrays (page 1736, col. 2, lines 2-4) which can then be dried, washed, contacted electrically, and then screened for activity (page 1736, col. 3, lines 14-18). Reddington et al. describe some of the complexes as containing ruthenium and platinum (page 1736, col. 3, lines 8-10), as stated in claims 9 and 10. Reddington et al. describe the presence of  $\text{OsCl}_3$  (page 1736, col. 3, line 9), which is a halide composition as stated in claim 12. Reddington et al. describe the use of a  $\text{Ni}^{2+}$  complex of 3-pyridin-2-yl-4,5,6-triazolo-1,5-a-pyridine (page 1736, col. 1, lines 6-7) which is an inorganic co-catalyst, as stated in claim 13. Reddington et al. describe the use of small amounts of compounds (micro scale) to find some products with a substantial increase in activity (page 1736, col. 1, lines 13-15).

Reddington et al. describe a method of conducting experiments on second experimental spaces including a catalyst system. However, Reddington et al. do not describe the use of an iterative process in order to select the best set of factors. Reddington et al. do not describe a processor, reactor, evaluator, display terminal, database, computer-generating test cases system, computer-combining test cases system, or an output of tables to a merged table of test cases.

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Reddington et al. do not describe the use of palladium or a combination of inorganic co-catalysts.

Reddington et al. do not describe utilizing tagged reactants and identifying tagged products.

Agrafiotis et al. describe a combinatorial chemical library with three building blocks (factors) (col. 5, lines 6-18) in which an iterative process is performed whereby compounds are tested, analyzed, and selected compounds are directed to the next iteration (col. 3, lines 42-55) as stated in claims 1 and 7. This reiteration process results in an optimization approach (col. 5, lines 25-28) as stated in claims 1 and 8. Agrafiotis et al. describe a Chemical Synthesis Robot which synthesizes a chemical library by selectively mixing a set of chemical building blocks (col. 5, lines 28-36). Agrafiotis et al. describe the generated library is then analyzed by an analysis robot to obtain data [including structure-activity/structure-property relationship data] pertaining to the compounds (col. 5, lines 62-67 and col. 6, lines 1-7) which is stored in a database (col. 6, lines 21-27). Agrafiotis et al. describe the Synthesis Protocol Generator (processor and control logic, col. 7, lines 60-62) uses various types of data pertaining to chemical compounds in order to derive and/or refine models that conform to the observed data (col. 6, lines 28-36). Agrafiotis et al. describe the generation of new instructions for the synthesis of chemical compounds from combinations of identified reagents (col. 6, lines 49-54). Agrafiotis et al. describe a communication medium and input device (such as a touch screen) which receives input from human operators and forwards the information to the System Protocol Generator (col. 8, lines 8-22). Agrafiotis et al. describe the use of an output device which is connected to the databases (col. 8, lines 8-13 and 23-29). This system described by Agrafiotis et al. is performed in microscale proportions (col. 8, line 43).

Chaudhari et al. describe the method of preparing diaryl carbonates in the presence of a catalyst composition comprising a Group VIIIB metal such as palladium (abstract) in addition to inorganic co-catalysts (col. 1, lines 32-44).

Nova et al. describe the analyses of biological and chemical interactions using labels or tags to track and identify the results of such analyses (col. 4, lines 58-64). Nova et al. describe monitoring chemical reactions linked to other chemical reactions (col. 4, lines 65-67). Nova et al. describe these methods for tracking and identifying analytes in biological interactions and the reactants and products of chemical reactions (col. 5, lines 3-7).

Reddington et al. discuss the need to intelligently design arrays because the number of compositions sharply increase with the addition of each new element (page 1736, col. 2, lines 6-9). Chaudhari et al. state that various methods of preparing diaryl carbonates are possible (col. 1, lines 18-31). Nova et al. state drug discovery relies on the ability to identify compounds that interact with a selected target (col. 4, lines 41-43) and that such tracking and identification is done via labels and tags (col. 4, lines 58-60). A skilled artisan in the art would have been motivated to enhance and expand the combinatorial screening method using non-redundant experimental design on second experimental spaces as stated by Reddington et al. and using other compounds besides those mentioned by Reddington et al. by automating the process in order to create an efficient and effective way of generating new chemical leads for specific utilities, as stated by Agrafiotis et al. (col. 3, lines 27-29) with tagged compounds, as stated by Nova et al. (col. 4, lines 58-60), using compounds such as those mentioned by Chaudhari et al. in order to find alternatives to polycarbonate preparation which are environmentally advantageous over methods employing toxic gas, as stated by Chaudhari et al. (col. 1, lines 13-17). Therefore,



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it would have been obvious to one having ordinary skill in the art at the time the invention was made to create a computer automated system involving iterative steps to optimize the chemical selection process (as stated by Agrafiotis et al.) using tagged reactants and products (as stated by Nova et al.) after redundant chemical combinations were eliminated (as stated by Reddington et al.), because this would have created a quicker and more efficient trackable selection of chemical combinations within the wide range of possible combinations available in the combinatorial screening process as desired in the intelligent experiment designing of arrays as proposed by Reddington et al. (page 1736, col. 2, lines 6-9). Using palladium and a collection of inorganic co-catalysts (as stated by Chaudhari et al.) in the combinatorial high throughput screening arrays (as stated by Reddington et al.) would enhance understanding of potential molecular candidates to be used in the environmentally-friendly preparation of diaryl carbonates at the time of the invention, as stated by Chaudhari et al. (col. 1, lines 13-17).

Thus, Reddington et al., in view of Chaudhari et al., Agrafiotis et al., and Nova et al., motivate the limitations in claims 1, 3, 4, and 6-14.

### ***Conclusion***

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and

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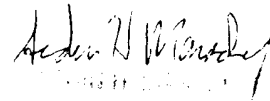
1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The CM1 Fax Center number is either (703) 308-4242 or (703) 305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (703) 308-6043. The examiner can normally be reached Monday through Friday from 8 A.M. to 4:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on (703) 308-4028.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instruments Examiner Tina Plunkett whose telephone number is (703) 305-3524 or to the Technical Center receptionist whose telephone number is (703) 308-0196.

May 2, 2003



Andrew H. M. Bradley